

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method implemented in a computing system that includes one or more processors and system memory, the method for causing the computing system to execute a transaction of direct methods in a manner that the effects of the transaction may be at least partially undone even though a custom inversion process was not previously constructed for the transaction, the method comprising the following:

creating a mapping between each of a plurality of groups of one or more direct methods with a corresponding group of one or more inversion methods, wherein a direct method is a method undone by a group of one or more of the inversion methods, ~~and wherein the inversion methods in the mapping are reusable for a plurality of different transactions;~~

after creating the mapping, beginning a transaction;

running a group of one or more direct methods as ~~at least part~~ of the transaction, the group being one of the plurality of groups of one or more direct methods;

within the transaction, using the mapping and identifying the corresponding group of one or more inversion methods corresponding to the group of one or more direct methods; and

recording the identity of the corresponding group of one or more inversion methods in a compensation record for the transaction, wherein the corresponding group of one or more inversion methods is in the mapping and is reusable for a plurality of different transactions and, when invoked, undoes only a portion of the transaction, and independent of other transactions and other parts of the transaction, by undoing only actions of the transaction corresponding to the group of one or more direct methods run as a part of the transaction.

2. (Previously Presented) A method in accordance with Claim 1, wherein the group of one or more direct methods is a first group of one or more transactions and the corresponding group of one or more inversion methods is a first group of one or more inversion methods, the method further comprising the following:

running a second group of one or more direct methods as at least part of the transaction, the second group being one of the plurality of groups of one or more direct methods;

using the mapping to identify the corresponding second group of one or more inversion methods corresponding to the second group of one or more direct methods; and

recording the identity of the corresponding second group of one or more inversion methods in the compensation record.

3. (Previously Presented) A method in accordance with Claim 2, further comprising the following:

committing the transaction.

4. (Previously Presented) A method in accordance with Claim 3, further comprising the following:

saving the compensation record to a persistent media upon committing the transaction.

5. (Previously Presented) A method in accordance with Claim 3, further comprising the following:

determining that the transaction should be compensated; and

executing the inversion methods identified in the compensation group corresponding to the transaction.

6. (Previously Presented) A method in accordance with Claim 3, wherein the transaction is a first transaction and the transaction record is a first transaction record, the method first comprising the following:

beginning a second transaction;

running a third group of one or more direct methods as at least part of the second transaction, the third group being one of the plurality of groups of one or more direct methods;

using the mapping to identify the corresponding third group of one or more inversion methods corresponding to the third group of one or more direct methods; and

recording the identity of the corresponding third group of one or more inversion methods in a compensation record for the second transaction.

7. (Previously Presented) A method in accordance with Claim 6, further comprising the following:

committing the second transaction.

8. (Original) A method in accordance with Claim 7, wherein the first and second transaction are part of the same larger transaction.

9. (Previously Presented) A method in accordance with Claim 8, further comprising the following:

determining whether a larger transaction should be compensated;

executing the inversion methods identified in the first compensation record corresponding to the first transaction in response to determining that a larger transaction should be compensated; and

executing the inversion methods identified in the second compensation group corresponding to the second transaction in response to determining that a larger transaction should be compensated.

10. (Previously Presented) A method in accordance with Claim 7, further comprising the following:

saving the second compensation record to a persistent media.

11. (Previously Presented) A method in accordance with Claim 1, further comprising the following:

receiving a message, wherein beginning the transaction is performed in response to receiving a message.

12. (Original) A method in accordance with Claim 11, wherein the message is a HyperText Transport Protocol (HTTP) message.

13. (Original) A method in accordance with Claim 11, wherein the message is a Simple Object Access Protocol (SOAP) message.

14. (Original) A method in accordance with Claim 1, wherein each of the plurality of groups of one or more direct methods each comprise a single method.

15. (Original) A method in accordance with Claim 14, wherein each of the plurality of groups of one or more inverted methods each comprise a single inverted method.

16. (Original) A method in accordance with Claim 1, wherein each of the plurality of groups of one or more inverted methods each comprises a single inverted method.

17. (Previously Presented) A method in accordance with Claim 1, wherein creating a mapping comprises the following for at least one of the one or more direct methods in the group of one or more direct methods:

listing one or more parameters for the direct method that should be in the inverted method.

18. (Previously Presented) A method in accordance with Claim 17, wherein running a group of one or more direct methods comprises the following:

running the direct method using particular values corresponding to the one or more listed parameters.

19. (Previously Presented) A method in accordance with Claim 18, further comprising the following:

recording values for the one or more listed parameters for the direct method in the compensation record.

20. (Previously Presented) A method in accordance with Claim 19, further comprising the following:

determining that the transaction should be compensated; and

executing the inversion methods identified in the compensation group corresponding to the transaction, wherein the inversion method corresponding to the direct method is executed using the recorded values in the compensation record.

21. (Currently Amended) A computer program product for use in a computing system that includes one or more processors and system memory, the computer program product for performing a method for the computing system to execute a transaction of one or more direct methods in a manner that the effects of the transaction may be at least partially undone even though a custom inversion process was not previously constructed for the transaction, the computer program product comprising:

one or more computer-storage media having stored thereon computer-executable instructions that, when executed by the one or more processors, cause the computing system to:

create a mapping between each of a plurality of groups of direct methods with a corresponding group of inversion methods that, when executed by the one or more processors of the computing system, cause the computing system to at least partially undo the effects of the execution of the corresponding group of direct methods, wherein a direct method is a method undone by a group of one or more of the inversion methods;

maintain the mapping between each of the plurality of groups of direct methods with a corresponding group of inversion methods;

after creating the mapping, begin a transaction;

run each of a group of direct methods as at least part of the transaction, the group being one of the plurality of groups of direct methods;

within the transaction, use the mapping and identify the corresponding group of inversion methods corresponding to the group of direct methods; and

record the identity of the corresponding group of inversion methods in a compensation record for the transaction, wherein the corresponding group of one or more inversion methods is in the mapping and is reusable for a plurality of different transactions and, when invoked, undoes only a portion of the transaction, and independent of other transactions and other parts of the transaction, by undoing only actions of the transaction corresponding to the group of one or more direct methods run as a part of the transaction.

22. (Previously Presented) A computer program product in accordance with Claim 21, wherein the group of one or more direct methods is a first group of one or more transactions and the corresponding group of one or more inversion methods is a first group of one or more inversion methods, the computer program product further having thereon computer-executable instructions that, when executed by the one or more processors, further cause the computing system to perform the following:

run a second group of direct methods as at least part of the transaction, the second group being one of the plurality of groups of direct methods;

use the mapping to identify the corresponding second group of inversion methods corresponding to the second group of direct methods; and

record the identity of the corresponding second group of inversion methods in the compensation record.

23. (Previously Presented) A computer program product in accordance with Claim 22, the computer program product further having thereon computer-executable instructions that, when executed by the one or more processors, further cause the computing system to perform the following:

commit the transaction.

24. (Previously Presented) A computer program product in accordance with Claim 23, the computer program product further having thereon computer-executable instructions that, when executed by the one or more processors, further cause the computing system to perform the following:

save the compensation record to a persistent media upon committing the transaction.

25. (Previously Presented) A computer program product in accordance with Claim 23, the computer program product further having thereon computer-executable instructions that, when executed by the one or more processors, further cause the computing system to perform the following:

- determining that the transaction should be compensated; and
- executing the inversion methods identified in the compensation group corresponding to the transaction.

26. (Previously Presented) A computer program product in accordance with Claim 23, wherein the transaction is a first transaction and the compensation record is a first compensation record, the computer program product further having thereon computer-executable instructions that, when executed by the one or more processors, further cause the computing system to perform the following:

- beginning a second transaction;
- running a third group of direct methods as at least part of the second transaction, the third group being one of the plurality of groups of direct methods;
- using the mapping to identify the corresponding third group of inversion methods corresponding to the third group of direct methods; and
- recording the identity of the corresponding third group of inversion methods in a compensation record for the second transaction.

27. (Previously Presented) A computer program product in accordance with Claim 26, the computer program product further having thereon computer-executable instructions that, when executed by the one or more processors, further cause the computing system to perform the following:

- committing the second transaction.

28. (Original) A computer program product in accordance with Claim 27, wherein the first and second transaction are part of the same larger transaction.

29. (Previously Presented) A computer program product in accordance with Claim 28, further comprising the following:

determining whether a larger transaction should be compensated;

executing the inversion methods identified in the first compensation group corresponding to the first transaction in response determining that a larger transaction should be compensated; and

executing the inversion methods identified in the second compensation group corresponding to the second transaction.

30. (Previously Presented) A computer program product in accordance with Claim 27, further comprising the following:

saving the second compensation record to a persistent media.

31. (Previously Presented) A computer program product in accordance with Claim 21, further comprising the following:

receiving a message, wherein beginning the transaction is performed in response to receiving the message.

32. (Previously Presented) A method in accordance with Claim 21, wherein each of the plurality of groups of direct methods each comprise a single method.

33. (Previously Presented) A method in accordance with Claim 32, wherein each of the plurality of groups of inverted methods each comprise a single inverted method.

34. (Previously Presented) A method in accordance with Claim 21, wherein each of the plurality of groups of inverted methods each comprises a single inverted method.

35. (Previously Presented) A method in accordance with Claim 21, wherein creating a mapping comprises the following for at least one of the direct methods in the group of direct methods:

listing one or more parameters for the direct method that should be in the inverted method.

36. (Previously Presented) A method in accordance with Claim 35, wherein running a group of direct methods comprises the following:

running the direct method using particular values corresponding to the listed parameters.

37. (Previously Presented) A method in accordance with Claim 36, further comprising the following:

recording values for the listed parameters for the direct method in the compensation record.

38. (Previously Presented) A method in accordance with Claim 37, further comprising the following:

determining that the transaction should be compensated; and

executing the inversion methods identified in the compensation group corresponding to the transaction, wherein the inversion method corresponding to the direct method is executed using the recorded values in the compensation record.

39. (Previously Presented) A computer program product in accordance with Claim 21, wherein the one or more computer-storage media are physical memory media.

40. (Original) A computer program product in accordance with Claim 39, wherein the physical memory media include system memory.

41. (Original) A computer program product in accordance with Claim 39, wherein the physical memory media include a persistent media.

42. (Currently Amended) A method implemented in a computing system that includes one or more processors and system memory, the method for causing the computing system to execute a message-based transaction within a larger transaction, the message-based transaction having one or more methods, and in a manner that the effects of the message-based transaction may be at least partially undone even though a custom inversion process was not previously constructed for the message-based transaction, the method comprising the following:

creating and maintaining a mapping between each of a plurality of groups of one or more direct methods with a corresponding group of one or more inversion methods that, when executed by the one or more processors of the computing system, cause the computing system to at least partially undo the effects of the execution of the corresponding group of one or more direct methods, wherein a direct method is a method undone by a group of one or more of the inversion methods, and wherein the inversion methods in the mapping are reusable for a plurality of different transactions, wherein the mapping includes:

a plurality of direct groups, and for each of a plurality of direct groups, one or more direct methods executable by the computing system to accomplish at least a part of the message-based transaction;

a plurality of inversion groups, and for each of the plurality of inversion groups:

one or more inversion methods executable by the computing system to at least partially undo effects of at least one of the plurality of direct groups; and

one or more parameters whose value should be taken from a direct method of a corresponding direct group to at least partially undo the effects of at least one of the plurality of direct groups; and

a link from each of the plurality of direct groups to a corresponding inversion group;

receiving a message having a message exchange pattern;

after creating and maintaining the mapping, and in response to receiving the message, performing at least the message-based transaction within the larger transaction in a manner that the mapping is used to automatically generate compensation procedures that when executed by the one or more processors, cause the computing system to at least partially undo the effects of the message-based transaction, wherein performing the message-based transaction includes:

beginning the message-based transaction by establishing a transaction record, assigning a transaction record identifier, and creating a compensation record for the transaction;

executing a first group of direct methods from the plurality of direct groups, and thereby running direct methods as part of the message-based transaction;

using the mapping, identifying the corresponding group of inversion methods corresponding to the first group of direct methods; and

recording the identity of the corresponding group of inversion methods in a compensation record for the message-based transaction, wherein the compensation record:

is included in the message-based transaction that is within the larger transaction;

is associated with a transaction record identifier;

has stored therein an identification of an inversion group identification corresponding to an inversion group in the mapping, which inversion group in the mapping, when executed, ~~at least partially undoes the effects of~~ only a portion of the message-based transaction, wherein the inversion group in the mapping that is executed to undo the effects of only a portion of the message-based transaction is reusable for a plurality of different transactions and, when invoked, undoes actions independent of other transactions and other parts of the message-based transaction, by undoing only actions of the message-based transaction corresponding to the first group of direct methods run as part of the message-based transaction; and

has stored therein one or more specific parameter values corresponding to the one or more parameters in the corresponding inversion group of the mapping; determining that the larger transaction should be compensated;

after determining that the larger transaction should be compensated, using the compensation record that was automatically generated by compiling a collection of inversion groups and associated parameter values to compensate the message-based transaction, and by executing the corresponding group of inversion methods together with associated parameter values; and

using additional compensation records in the larger transaction to compensate additional constituent transactions within the larger transaction.

43-48. (Cancelled).